5-2014

Dramatic Play Affordances of Natural and Manufactured Outdoor Settings for Preschool-Aged Children

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DRAMATIC PLAY AFFORDANCES OF NATURAL AND MANUFACTURED OUTDOOR SETTINGS FOR PRESCHOOL-AGED CHILDREN

by

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A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF LANDSCAPE ARCHITECTURE

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UTAH STATE UNIVERSITY
Logan, Utah

2014

ABSTRACT

Dramatic Play Affordances of Natural and Manufactured Outdoor Settings for Preschool-Aged Children

by

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Concern for child wellness has led play professionals to explore natural playscapes as a means to enhance free play and consequently child development. For preschool-aged children, dramatic play is a particularly valuable free play that advances cognitive skills, social skills, and emotional intelligence. This study compared the dramatic play affordances of natural and manufactured outdoor play settings to determine which afford the most dramatic play for preschool-aged children. Twenty-four 3- to 5-year-olds were observed during daily playtime on a "natural playground" and an equipment-based "manufactured playground." Behavior mapping identified settings that afforded the most solitary dramatic, sociodramatic, and complex sociodramatic play. The study suggests that environments designed with child-scale constructive play props, a sense of enclosure, and natural surroundings are more likely to support complex dramatic play. Intentional inclusion of these design elements may afford greater dramatic play in

the preschool play yard.

(85 pages)

PUBLIC ABSTRACT

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Concern for child wellness has led play professionals to explore natural playscapes as a means to enhance free play and consequently child development. For preschool children, dramatic or make-believe play is particularly beneficial for enhancing cognitive, social, and emotional skills. Dramatic play in collaboration with other children (sociodramatic play) and, surpassing that, complex socio-dramatic play (group make-believe with a sustained theme that uses sophisticated symbolism) are most valuable for development.

This study compared natural and manufactured outdoor play settings to determine which provided the most opportunity for quality dramatic play. Twenty-four 3- to 5-year-olds were observed during daily playtime on a "natural playground" and an equipment-based "manufactured playground." By tracking children's play behaviors with the specific locations where they occurred; the settings that supported the most solitary dramatic play, group dramatic play, and complex group dramatic play were identified.

The data suggests that play environments designed with manipulable parts that allow children to create their own spaces, intimate semi-enclosed places, and surrounding vegetation are more likely to support complex dramatic play. Therefore the intentional inclusion of these design elements may support more developmental play and learning on the preschool playground.

ACKNOWLEDGMENTS

I would like to thank my thesis committee, especially my advisor, Dr. Keith Christensen, for his straightforward, insightful direction, good-natured encouragement, his time and knowledge; the preschool staff that supported this study; graduate researcher Chris Binder for his help with data collection; Jeff Drown for being a willing assistant and constant support; and the young preschool participants that reminded me how exciting it is to play and make-believe.

Kimberly K. Cloward Drown

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CHAPTER 1

INTRODUCTION

There is a current trend in playground design towards natural playgrounds that eschew traditional manufactured equipment for grassy hills, rock piles, logs, sand pits, vegetation, and other natural elements (Kuh, Ponte, & Chau, 2013). In developed countries, heightened awareness of rising rates of childhood obesity, rapidly declining opportunity for outdoor play and increase in screen time and computer play for children, have fueled a movement aimed at getting children back outside and in touch with nature (Burdette & Whitaker, 2005; Frost, 2010; Waller, Sandseter, Wyver, Ärlemalm-Hagsér, & Maynard, 2010). The movement has been evidenced since the late 1990s and early 2000s by the establishment of design firms that specialize in natural playgrounds and an increase in literature, research initiatives, and government initiatives related to nature play. Yet it appears that childcare providers and playground designers may be driven by the intrinsic value of nature or nostalgia for their own childhood rather than by evidence-based, intentional practice that meets the developmental needs of today's child (Waller et al., 2010). Current research indicates a positive correlation between natural playscapes, increased physical activity, and healthy physical development (Cosco, 2006; Cosco, Moore, & Islam, 2010; Fjørtoft & Sageie, 2000). But research to support the claim that natural environments contribute to development of the "whole child," physically as well as socially, cognitively, and emotionally is not as strong (Fjørtoft & Sageie, 2000).

Dramatic Play is Important

Free play holds a central role in childhood across cultures as a major facilitator of

healthy development (Isenberg & Quisenberry, 2002). Through play, children explore and process their surrounding world combining reality with imagination and fun; this helps them sort through their thoughts, develop an understanding of their environment, and establish a sense of self (Saracho & Spodek, 1998). Play is effective because it is child-directed. Through successive stages of development, play behavior shifts in form and function—different types of play build new skills and abilities (Isenberg & Quisenberry, 2002).

Dramatic play, particularly sociodramatic play, increases during the preschool years and is an especially beneficial mode of learning for preschool-age children (Bredekamp, 2004; Copple & Bredekamp, 2009; McLoyd, 1983; Rubin & Coplan, 1998). Dramatic play is imaginative behavior involving a transformation of objects, actions, and self identity (Petrakos & Howe, 1996). Sociodramatic play within a group requires multiple high-level cognitive strategies to develop and sustain make-believe themes: metacommunication, planning, goal seeking, problem solving, negotiation, and coordination (Bergen, 2002; Copple & Bredekamp, 2009; Rubin & Coplan, 1998). It has been argued that learning to understand and share decontextualized and symbolic ideas is a fundamental task of early childhood (Rubin & Coplan, 1998). Through dramatic play a child begins to master the art of operating within conceptual constructs; this is seen as a preparation for success in school where much of learning happens through abstract thinking rather than direct experience (Smilansky, 1968). Children who engage in more complex sociodramatic play score better on imagination and creativity tests, have better problem solving skills, and are generally more popular, have more positive social

interactions and better social skills (Brown, Sutterby, & Thornton, 2013). Research has also shown that sociodramatic play helps to develop self-regulation, especially in impulsive children (Elias & Berk, 2002). As children combine multiple domains (cognitive, motor, emotional, and linguistic skills), and likely engage multiple areas of the brain, dramatic play may strengthen and create new synaptic connections (Bergen, 2002). Along the same lines, dramatic play can support early childhood literacy by building connections between speech and writing through activities such as taking a pretend restaurant order or making a pretend grocery list (Christie, 1990; Roskos & Christie, 2001).

Enriching a child's playspace and providing opportunities for dramatic play provides child-directed learning experiences and increases the available learning modalities for child development. Understanding of the functional importance of dramatic play is derived from the foundational theories of Piaget and Vygotsky. Piaget understood play to be a vital means of acquiring knowledge through assimilation and accommodation. He believed dramatic play helped children to retain new skills by allowing them to practice skills attained in non-play situations (Rubin & Coplan, 1998). Piaget's second stage in cognitive development, the preoperational stage, is when children develop the ability to form symbolic representations. There is a switch from the sensorimotor stage, which is about gaining knowledge through the senses and understanding the world in a tangible way, to conceptual thinking. Piaget's preoperational stage coincides with other researchers' observations of dramatic play, which is generally accepted to begin around age three, and starts to wane by age six

(Smilansky, 1968). During the preschool years, dramatic play builds cognitive capacity as a child begins to represent their experiences, modify them with non-reality and re-play them again and again.

Like Piaget, Vygotsky viewed dramatic play as a leading source of development in the early years. He proposed that play, specifically dramatic play, was much more than a reflection of a child's current level of development; it represented a "zone of proximal development," a mode of accelerating development. Studies in the 1970s supported Vygotsky's theory, demonstrating that a child's mental capacity was higher during play. For example, Istomina observed that a child remembered a longer list of words when the list was incorporated into play as a "market" shopping list, as opposed to the conventional classroom setting (Bodrova, 2008). Vygotsky also viewed dramatic play as a means of acquiring self-regulation. During a play episode, a child sets aside reality, what is in front of them, and focuses on sustained mental representation; a child learns focus by imposing play rules on themselves (Elias & Berk, 2002). Research has supported the theories of both Piaget and Vygotsky to demonstrate that preschool-aged children, given free choice and a rich environment to support play, develop greater cognitive capacity, better social skills, and higher emotional intelligence (Copple & Bredekamp, 2009).

Environmental Factors Affect Dramatic Play

Children are geniuses of play, spontaneously engaging in play whenever and wherever. Play is a child's means of experiencing the world. Yet some environments are

better catalysts than others for quality play (Senda, 1992). Smilansky observed that underprivileged children lacking access to environments intentionally designed for play skipped the sociodramatic rich play phase and went straight from constructive play to games with rules (Smilansky, 1968). Within intentionally designed playscapes, Cosco (2006) observed that playground features lacking hands-on experiences were less attractive to children. Children themselves, as design participants and critics, report preference for and feelings of well being within natural playspaces (Groves & McNish, 2011; Moore, 1989a). Perhaps this implies that behavior settings that are malleable and flexible, as is characteristic of many natural elements, afford a greater range of play and are thus more attractive to children. Nature is non-prescriptive and can allow imaginative play outside the bounds of predetermined themes (Chancellor, 2007). Correspondingly, ecological diversity has been shown to lend itself more easily to dramatic play (Moore, 1989a; Woolley & Lowe, 2012). Part of this malleability is the automatic presence of "loose parts," leaves, seedpods, or sticks that can be used as dramatic play props (Moore, 1989b; Moore et al., 2009; Moore, Goltsman, & Iacofano, 1992). Interestingly, a study on the effects of high structure toys (ie: telephone, medical kit, trucks, dolls…) versus low structure toys (ie: cardboard box, pipe cleaners, metal cans…) on dramatic play in preschool children concluded that high structure toys lead to more role-playing, while low structure toys (the category where natural play props would fit) lead to more object substitution. Sociodramatic play, as a whole, was not affected by a prescribed use of the play objects or lack thereof (McLoyd, 1983). Teachers' provision of play props aside, complex social interaction between peers has been shown to be more likely outdoors than

indoors (Buckley, 2012; Shim, Herwig, & Shelley, 2001). Children can relax outdoors; they can move around, make noise, and direct themselves more freely. A study by Vandenberg (1981) supported the correlation between free movement and social play. His experiment compared the social play in two rooms, one designed to support large motor skills and the other to support fine motor skills. More social play happened in the room that afforded large motor activities. In addition, the children drawn to the more social environment of the large motor room tended to be more cognitively mature and less egocentric (Vandenberg, 1981). On the other hand, natural environments, which provide quiet spaces away from the large motor driven equipment-based activities, have been shown to be more inclusive and affording of dramatic play (Groves & McNish, 2011). Perhaps both large motor and quiet-space affordances are needed (Moore et al., 2009).

Informed Design Can Support Dramatic Play and Child Development

As children spend more time in childcare facilities and preschools than in their own back yards, the design of adjacent outdoor environments becomes more important (Herrington & Studtmann, 1998). In 2011, the U.S. Census Bureau reported that a quarter of children in the United States under 5 years old spent the majority of their time in childcare facilities (daycare, preschool, or Head Start). A study of children's physical activity and the playground environment concluded that affordances for physical activity could be intentionally designed in outdoor environments for children (Cosco, 2006). It is thus plausible that dramatic play affordances can also be intentionally designed.

Therefore the purpose of this study was to inform the design of increasingly important playscapes by understanding the dramatic play affordances of natural and manufactured outdoor play settings.

CHAPTER 2

LITERATURE REVIEW

Development Through the Preschool Years

Many aspects of child development follow a well-documented sequence with later abilities built on previously acquired skills (Copple & Bredekamp, 2009). This knowledge is available as a framework to guide the design of age-appropriate environments tailored to support learning and growth (Isenberg & Quisenberry, 2002). A developmentally appropriate playscape acknowledges developmental benchmarks and provides the means wherewith to achieve and practice these behaviors. It should also include a spectrum of skill levels to ensure developmental support to meet each child at their ability (Barbour, 1999). Since all domains of learning (cognitive, emotional, physical, and social) are highly interrelated and crucial to a child's development and eventual success in adulthood, an ideal play environment should benefit all domains. This is especially true considering that the development of one domain facilitates development of the other domains, while lack of development hinders the others (Copple & Bredekamp, 2009).

Copple and Bredekamp's text (2009), *Developmentally Appropriate Practice in Early Childhood Programs*, gives an understanding of the developmental trajectory during the preschool years: The ages of 3 to 5 are a time of great maturation and growth. For preschoolers, emotional development means development of a conscience, the ability to recognize emotions in the self and others, coping strategies to deal with stress and self-

regulation of negative emotions. In the last fifteen years, emotional development in preschoolers has taken the spotlight as research has demonstrated that emotional development has a significant effect on one's attitude and motivation to learn. Cognitive development includes development of attention, memory strategies, mental and symbolic representation, and reasoning. This is closely related to the development of language abilities. Physically, preschool-aged children are still developing basic movement skills; they become more coordinated and start to move with greater fluidity. Their perception increases as they begin to recognize visual patterns, develop binocular vision, and improve auditory recognition and sound processing. Their hands also gain greater fine motor coordination. On the social front, preschoolers begin to develop relationships beyond their immediate family, widening their social circle to include peers, teachers, and other adults. With support from adults and through opportunities to interact with each other, preschoolers learn social competence. They also develop greater recognition of the self. Experience combined with gains in cognitive and emotional skills, leads to an increase in prosocial behavior, but also the ability for relational aggression.

Understanding the baseline sequence of development across domains allows playground designers to ground their design intentions and evaluate the effectiveness of a play space to support age-appropriate play activities.

Play Activities and Development

Contemporary theorists offer several explanations for the purpose and functions of child's play, however all agree that play is crucial for healthy development (Isenberg

& Quisenberry, 2002). For children, education and recreation are one in the same (Nicholson, 1971). Not all play influences child development to the same degree or in the same way. Different types of play provide different types of learning in varying levels of effectiveness (Copple & Bredekamp, 2009). As a child develops, play behaviors change to support learning and growth (Isenberg & Quisenberry, 2002). Play activities offered on playgrounds must afford age appropriate activities and play value. Analogous to the sequential development of children, there are four well-accepted stages of play developed by Sara Smilansky using psychologist Jean Piaget's theories of cognitive development. In sequence the stages are: functional play, constructive play, dramatic play, and games with rules (Smilansky, 1968).

Functional play consists of simple physical actions repeated to understand one's own capabilities and the physical characteristics of one's immediate environment. Also called sensorimotor or exploratory play, this stage is generally associated with infants and toddlers engaged in actions such as repeatedly dropping an object to see what happens or squishing and prodding a ball of clay. Functional play is manifest in older children on a playground through repetitive physical play such as sliding down a slide, using a swing, or walking along a balance beam. Through the joy of movement children master new actions, develop gross motor skills, and figure out the world around them. Functional play aides in development of the senses and spatial awareness as children respond to colors, textures, sounds, smells, and movement through space (Eriksen, 1985). For a better understanding of how play supports the development of sensory processing,

especially for children with sensory integration disorders, play may be further identified as auditory play, tactile play, proprioceptive play, and vestibular play.

From simple manipulation of materials, children move to constructive play, which involves intentional formation and purposeful creation. For example: stacking blocks, shaping sand into a "birthday cake," or painting pictures on the sidewalk with water. This requires and allows the practice of higher cognitive functioning—concentration, organization, and simple problem solving to lead to a goal (Smilansky, 1968). Constructive play can also help develop fine motor skills, or hand-eye coordination.

Dramatic play, also referred to as symbolic or pretense play is when children pretend to be someone else or to be somewhere else. Through representational skills and imaginative expression, dramatic play provides a foray into abstract thought and more complex cooperation with peers. Complex sociodramatic play provides peer interaction for prolonged periods of time with high involvement and cooperation (Copple & Bredekamp, 2009). During dramatic play children also practice language skills as they plan and negotiate a play scene, narrate situations, and speak in character. Throughout childhood development, Smilanksy's four stages of play overlap significantly and parallel each other, but at a given phase, one stage is generally more dominant than the others (Smilansky, 1968). During the preschool years, dramatic play becomes dominant and one of the most beneficial forms of play (Smilansky, 1968).

In later years, around age six or seven, the final stage of play, games with rules, becomes dominant. Such games on the playground include: hopscotch, tag, red rover, soccer and other competitive sports, as well as random games invented by children that

require cooperative learning and negotiation. This type of play represents a mastery of abstract thought. They require behavior control and active cooperation to follow predetermined rules and limits (Smilansky, 1968).

Not unintentionally, Smilansky's stages of play reflect an increase in social cooperation, awareness, and skill. They parallel somewhat the social stages of play developed by Mildred Parten through her observation of children's play (Parten, 1932). Parten believed social participation increased in sequence as follows: unoccupied play, solitary play, onlooker play, parallel play, associative play, and cooperative play. By preschool age children can and often play in collaboration. In some studies the Smilanksy and Parten play categories are nested for increased specificity (ie: parallel-constructive or solitary-functional play) (Rubin, Watson, & Jambor, 1978). Through social play children connect with peers, experiment with self-image, and figure out human relationships. Socialization helps children expand their egocentric views to include other people and function in society. Although social participation may increase with age, more recent research has shown a weakness with the notion of an absolute continuum (Rubin et al., 1978). For example a preschool child in solitary play is not necessarily an indication of immaturity.

While the Parten, Smilansky, and Rubin scales correspond with stages of development, play may also be generally categorized by the domain, skill, or attribute it tends to support. Such categories include: physical or locomotor play, social play, creative play, and nature play. However this can sometimes seem arbitrary or subjective, especially since development of various domains is highly interrelated. Emotion is also

excluded from these categories because it is a supplemental effect rather than a direct corollary of a specific play activity. Novelty, risk, and exploration are important playground characteristics that enable children to experience and understand emotions like fear, joy, and satisfaction.

Why Meet Developmental Needs Outdoors?

Kyttä describes the ideal child-friendly environment as possessing diverse opportunities with the ability to access and freely take advantage of those opportunities (2004). She termed this model environment, the "bullerby-model" in reference to a noisy village in which everyone takes part (Kyttä, 2004). Outdoor environments that permit noise, greater physical movement, and messy play, than is practical indoors are more easily associated with the bullerby-model. Children themselves associate the outdoors with freedom, adventure, challenge, and risk (Titman, 1994). During outdoor play, young children perceive less assistance from adults and benefit from the feeling they are on their own to exercise independence, create meaning and make decisions (Waller, 2007). For preschool-aged children, the perceived freedom to move around and engage in spontaneous exploration is significant because it links physical action with a curious mind (Herrington & Lesmeister, 2006). Although preschool-aged children are capable of abstract thought, they learn best through active, hands on involvement using their senses (Copple & Bredekamp, 2009). Experiential learning corresponds well with a preschool child's natural affinity for movement and can be far more effective than pencil and paper activities. Outdoor free play also allows social freedom. Valuable opportunities for

unstructured interaction with peers, as opposed structured classroom activities, aide in developing relationship skills and social perception (Ladd & Price, 1993). Playgrounds, as the most easily recognized child-specific outdoor spaces, are thus an ideal place to focus on meeting developmental needs.

A Historical Progression of Playground Design 1900-2014

The history of playgrounds in the United States begins with the industrial era. With the increasing affluence of the general populous, the passage of child labor laws and growth of public education, children and their needs became distinct from adults (Eriksen, 1985). Early playgrounds were funded by private charitable organizations interested in the health and moral well being of children. They emerged as distinctly urban in character, located in densely populated cities such as Boston and New York where open space was lacking. Common components included sandboxes, gymnasium-climbing equipment and later slides and swings. By 1900, most major American cities had a playground (Eriksen, 1985). Around this time, educators and social scientists such as Dewey, Montessori, and Froebel began to generate scholarly and institutional interest in play as part of the education of the "whole child." Yet then, and commonly throughout history, dominant social or economic forces seem to have directed playground design more than child development or play theories.

Traditional or conventional playgrounds have the longest institutional history. Although their design has changed somewhat over the last century, the elements are basically the same: standard equipment on a uniform surface (asphalt, turf, rubber, or

wood chips). In 1906 the establishment of the Playground Association of America (now the National Recreation and Park Association) marked the institutionalization of the play movement and its placement in the public sector (Solomon, 2005). This allowed the playground movement to flourish aided by the addition of athletics into public school curricula (Christensen, 2001). Yet it also shifted playground emphasis from free play to physical exercise and athletic games. Efficiency and economy required by the public sector and material shortages caused by World War I began to limit and define playgrounds to the one-size-fits all appliance-oriented model (Solomon, 2005). Similar playgrounds in the UK have been termed KFC playgrounds referring to a *kit* of equipment surrounded by a *fence* on a *carpet* of rubber (Woolley & Lowe, 2012). These conventional playgrounds emphasize physical development and functional play to the exclusion of other domains, segregate playmates by physical ability, and lack flexibility or diversity leading to boredom and unsafe use. Despite their longevity, it has long been established that conventional playgrounds are the least stimulating and attractive to children (Barbour, 1999; J. G. Brown & Burger, 1984; Hayward, Rothenberg, & Beasley, 1974; Moore, 1989a; Woolley & Lowe, 2012).

Comparative playground literature uses the terms "contemporary" (Barbour, 1999; J. G. Brown & Burger, 1984; Hayward et al., 1974), "novelty" (Frost, 2010) and "designer" (Frost & Woods, 1998), to roughly categorize playgrounds that diverge somewhat from the traditional model. At various times in the 50s and 60s playground design crossed paths with high art to briefly pull the attention of designers (namely landscape architects and artists) toward site-specific design rather than placement of

catalog equipment (Solomon, 2005). This brief fad resulted in a number of highly respected playground designs. Designer playgrounds experimented with abstract forms, a variety of textures/materials (fiberglass, wood, concrete) and colors, representational sculptures, and new ideas—namely multifunctional structures with linking posts and platforms. The modular concept was quickly snatched up by playground manufacturers and is prevalent in what would be considered a conventional playground today. The increased connectivity between components allowed for greater variation and provided higher play value than the traditional playground. Themed or sculptural structures (another concept utilized by high-end play manufacturers today) also elevated play value by increasing the opportunities for dramatic play (Barbour, 1999). Yet thematic prescriptions inherently limit play making the playground static over time. Thus, though designer playgrounds acknowledge children's developmental needs, the focus on aesthetics often results in cosmetic rather than true improvements to the play environment (Brown & Burger, 1984).

On the other end of the spectrum is the adventure or junkyard playground. Play material (junk) rather than play equipment is provided for children to build and re-build their own playscape in a supervised space. Danish landscape architect C. Th. Sørenson built the first adventure playground in Emdrup, Denmark after observing a group of children choosing to play in a construction site rather than at a nearby playground. As a testament to the success of adventure playgrounds, a study by Hayward et al. (1974) demonstrated that children prefer adventure playgrounds over conventional or contemporary playgrounds. The "junkyards" hold their attention by providing a dynamic

environment where activities are child-directed and diverse, allowing for exploration, increased social interaction, graduated challenges, and problem solving. Yet, despite these benefits to children, adventure playgrounds never took hold in the United States. Several were built in the 1960s and 70s, but unavailability of funds to pay play leaders, concerns over aesthetics, and the misguided belief they were less safe than conventional playgrounds prevented their establishment (Eriksen, 1985).

The grass-roots spirit of the 1970s spurred a short-lived trend of community-built playgrounds and produced what might be one of the first intentional natural playgrounds in the United States. These community-built playgrounds are semiformal spaces that incorporate elements of the adventure playground (loose material, gardens, and custom-built equipment made with scrap materials like tires) with typical equipment of a conventional playground (Frost, 2010). The process allowed community members to work together to create developmentally appropriate and aesthetically pleasing play spaces (Frost, 2010). Likewise, the Environmental Yard, conceived by landscape architect-researcher, Robin Moore, and school principal Herb Wong, was designed in a participatory process. Program elements were generated through surveys and discussions with teachers, parents, neighborhood residents (including children), and the kindergarten-fourth grade students in attendance at the school. Built in 1972, the project transformed half an asphalt-and-equipment-playground at Washington Elementary, a U.C. Berkeley laboratory school, into a natural area with ponds and wooded areas reflective of local ecosystems, as well as a garden (Moore & Wong, 1997). Moore and Wong's work is a powerful example of qualitative research demonstrating the benefits of play in the natural

environment (Frost, 2010) and has provided the foundation for much research on nature play. But at the time, it had little bearing on the direction of routine playground design.

At the turn of the 21st century, concern for children with disabilities, led to the concept of inclusive play and the design of universal playgrounds. Originally therapeutic gardens designed to achieve particular therapeutic objectives, they quickly evolved into accessible, then universal playgrounds. All playgrounds mentioned above can be designed as accessible and inclusive, therefore universal playgrounds may not be a typology on their own, but more of an ideal for all types of playgrounds. However, universal playgrounds are generally thought to have more developmental benefits than traditional playgrounds because their focus is shifted away from physical activity to a broader spectrum of activities.

At the forefront of playground design today is the natural playground, also referred to as "natural playscape" or "naturalized playground". Interest in nature play is closely related to the budding ecological schoolyard movement and interest in accessible, immersive outdoor education. Within the last 10-15 years a synergy of trends has combined and gained momentum to encourage children to get in-touch with the natural world. These trends include:

- A shift in educational philosophy towards hands-on instruction that teaches to "multiple intelligences"
- Public concern about rising childhood screen time (television, computer, digital gaming) and the desire of parents and teachers to provide attractive alternatives that provide first-hand, physical experiences

- Edible gardens as a nutrition teaching tool to combat childhood obesity (which itself rides on the back of an "eat local" trend and increase in neighborhood farmers' markets)
- Native plantings and the creation of wildlife habitat in urban areas to meet water conservation goals and mitigate the loss of wildlife habitat
- Increasing societal recognition of anthropogenic environmental degradation coupled with institutional desire to practice social responsibility and foster environmental stewardship (Danks, 2010; Frost, 2010)

A primary goal of natural playground design is thus to engage children and teach them, especially about nature, through open-ended exploration and experimentation during free play.

The term "natural playground" will be used in this study to describe a type of playground that is intentionally designed to resemble or include natural landscape features. Common features on a natural playground include vegetation used for spatial definition and sensory interest, varied topography, malleable organic material (like sand, dirt and water) as well as other "loose parts" (Kuh et al., 2013; Woolley & Lowe, 2012). They may also include meandering paths, edible gardens or natural materials that directly reflect local ecosystems. Theoretically, the theme of learning through play coupled with an emphasis on malleable materials (as with adventure playgrounds) and societal support for connecting children with nature, seem to give natural playgrounds more advantages than their predecessors. An evaluation tool developed using established play literature, and tested on ten sites in England, confirms that natural playgrounds have greater

potential for play value than traditional playgrounds (Woolley & Lowe, 2012). However the actual effects of natural playgrounds and the nuances of various natural design elements on children's play and development are still being researched.

A Review of Research on Nature Play

Although playground categorization is somewhat arbitrary (Frost & Woods, 1998) and variations within playground type can vary substantially (Barbour, 1999), the overall typological comparison has value when examining natural playgrounds because of the inherent natural components that differentiate natural playgrounds from other playground types. The notion of a natural playground assumes greater variation due to seasons and the presence of living organisms, malleable organic surface materials (like sand or gravel), diverse terrain, vegetated settings, and a potential for interaction with animals. Research examines how these elements separately and in concert affect play and child well being.

Nicholson's theory of loose parts states that exploration, creativity, and inventiveness are directly proportional to the variety in an environment (Nicholson, 1971). For that reason, some research on natural playgrounds uses the ecological principle of biodiversity to measure differences in playground effectiveness (Moore, 1989a; Samborski, 2010). The incorporation of natural diversity into a play environment inherently offers more variety via seasonal changes and natural play props. Whereas seasonal shifts on a traditional playground are limited to weather events, a playground with dirt that turns to mud or deciduous shrubs that turn red in the fall, creates more

variable, visible, and tangible variation. In addition, natural "loose parts" such as sticks or pebbles are inherently present for children to use as play tools. Research supports the theory that greater biodiversity increases play value; It allows for a greater range of complex activities beyond physical play, more heterogeneous play group composition (especially inter-gender), and sustained social interactions (Kirkby, 1989; Kuh et al., 2013; Moore, 1986, 1989a; Samborski, 2010). This stands in strong contrast to the traditional playground, which is associated with boredom, segregation by gender and physical ability, and aggression (Moore, 1986, 1989a; Titman, 1994). However, a playground that lacks natural elements aside from a sandbox, but possesses a diversity of manufactured elements, also shows similar advantage over the typical traditional playground (Barbour, 1999). In both situations, dramatic play is more common with more diversity. Thus, although traditional playgrounds are decidedly on the inadequate end of the spectrum, it is unclear how natural playgrounds, or biodiversity, versus manufactured diversity fall or where an interplay of biotic and abiotic-diversity fits on the play value continuum.

Natural un-designed, uncultivated landscapes are also being studied for play value and applied to natural playground design. Fjørtoft (2004) compared kindergartener's play on an uncultivated woodland to play on a standard playground. She found that children who played in the woodland showed greater coordination, balance, and agility than the control group. Observations in the woodland also uncovered a relationship between play type and specific landscape features. For example dramatic play was observed most frequently in areas of broken topography with a mix of dense shrubs, open areas, and

trees. This study supports the power of variation, especially as it appears in nature with a variety of sloping terrain and vegetation. However it seems less applicable to urban children without easy access to a complex natural environment or the resources to replicate one.

A study by Kuh and colleagues (2013) examined the more practical situation of a traditional playground upgraded by a natural playscape designer. The renovation included an expansion of the sand play area with addition of a water pump, introduction of a set of large hollow wooden blocks with a child-accessible shed to store them, and construction of a wood play structure built around an existing pine tree. Before and after comparisons showed the importance of "loose parts" and connectivity in providing sustained, constructive, cooperative play; circuitous pathways enabled complex play scenes which spanned all three improved areas and involved multiple children acting in distinct roles (Kuh et al., 2013). Relocation of the climbing structure adjacent to the pine tree engaged children with the tree and its "loose parts" whereas before it was largely ignored. Aside from this no vegetative improvements were made. The natural playground philosophy was applied to the site, however implementation with the emphasis on wood blocks (a built object) and cooperative construction begins to blur the line between adventure playground and natural playground. Nature's true effect on play seems incompletely answered by the site.

Natural playgrounds are often promoted using research not on play but rather on the general effects of natural settings on children's psychological health and well-being. Such research suggests that exposure to vegetation and nature is restorative and promotes

higher cognitive functioning in children (Wells, 2000); it also acts as a buffer against life stress (such as relocation, being bullied at school, or peer pressure) (Wells & Evans, 2003). Green settings are also thought to increase attention functioning in children, especially those diagnosed with Attention Deficit Disorder (Taylor, Kuo, & Sullivan, 2001). The implication is that natural settings can mentally prepare a child for more productive learning and valuable play.

A couple studies look more specifically into the effects of schoolyard greening by asking site-users their feelings about certain spaces. Natural settings generally evoke positive, peaceful feelings whereas traditional schoolyards elicit negative responses (Dyment & Bell, 2008; Moore, 1986; Titman, 1994). Green schoolyards are also recognized for greater social inclusion in terms of gender, race, ability, and class (Dyment & Bell, 2008). In a study by Titman (1994), treatment of school grounds was acknowledged to affect an individual child's perception of self, attitudes, and behavior. Grass kept off limits by the school was seen by children as an unspoken message that turf was more important than them. In contrast the children's "ideal" school grounds contained places you can climb, hide, explore, or make a den, places that provide a challenge, trees, flowers, animals/wildlife, ponds, soft play surfaces, and malleable play materials (all elements which can be incorporated into a natural playground). Children express a preference and strong desire for the inclusion of natural elements in their surroundings (Moore, 1986; Titman, 1994). Natural elements may influence a child's sense of place, and correspondingly their behavior in the place, to a higher degree than what one might expect. In Moore's study of the Environmental Yard, children viewed the

ponds as one of the most significant features, even though they were not the most utilized (Moore, 1989a). Since comfort, a sense of belonging, and attitude affect one's ability to engage and have fun, natural settings likely aide in developing complex play.

Schoolyard greening (and the natural playground by association) carries with it the goal of environmental education and fostering an environmental ethic, making it worthwhile to mention studies on the effects of childhood play on adult attitudes. Childhood play on natural playgrounds, gardens, or in wilderness areas has not been strongly linked to the formation of a pro-environment ethic in adulthood. Solitary exploration in nature rather than social play in nature, where the emphasis is on the other children, seems to correlate better with an environmentalist attitudes in adulthood (Vadala, Bixler, & James, 2007; Wells & Lekies, 2006). However childhood play in nature has been linked to increased environmental knowledge and positive feelings about being in nature (Bixler, Floyd, & Hammitt, 2002; Vadala et al., 2007; Wells & Lekies, 2006). Thus while natural playgrounds may not foster environmental stewardship, they can provide opportunities to develop curiosity and formal learning about nature by providing a setting for "teachable moments" (Hamarstrom, 2012).

The benefits of nature to children are well proven, as are the benefits of outdoor play. It is therefore important to understand how the outdoors can best be shaped to support the full spectrum of developmental play. Rivkin (1997) asserts that successful schoolyard greening needs to be appropriate to the age of the children the schoolyard serves. Likewise Moore (1989a) has suggested that while vegetation can add to the play experience it can make the most difference if plant choices and layout are

developmentally appropriate (Moore, 1989a). Thus while it is important to look at a playground holistically, in order to prescribe design guidelines for specific play behaviors it is also important to look at the features individually.

A Framework for the Study of Playgrounds

The framework of affordances allows for closer examination of natural playgrounds by identifying elements that support desired play outcomes. *Affordances* are the behavioral possibilities provided by an environmental feature to an individual. This perception-action framework introduced by Gibson (1977) allows an environment to be described by its function rather than its form (Fjørtoft, 2004). A feature may accommodate multiple affordances with hierarchical differences between them. For example a playground slide may be used for vestibular play and secondarily, if a child runs up it backward, for physical play. The term affordances can also be expanded past physical actions to include social, cultural, and emotional opportunities (Kyttä, 2004). The affordance of dramatic play allows children the opportunity to interact with their peers.

Affordances are determined both by the characteristics of the environment and the characteristics of the individual (such as body proportions, ability, and personal intentions); therefore affordances vary from individual to individual and change as an individual matures (Heft, 1988). Affordances can be examined in three different stages: first potential, then perceived, then actualized. Potential affordances are all those in an environment, whereas perceived affordances are a subset determined by a specific

individual and actualized affordances are a smaller subset. Kyttä's bullerby-model, the ideal child-friendly environment, describes a situation with a high number of affordances combined with the social encouragement or freedom to actualize many of them (Kyttä, 2004). The function of an environmental feature can be taught or independently discovered by a child. Thus not only is variation important, but so is exploration, an integral part of the perception of affordances, and developmental appropriateness, essential for an affordance to be actualized (Cosco, 2006). As children actualize affordances they are motivated to continue exploring the environment (Kyttä, 2004). A rich stimulating playground which "arouses learner interest" (Eriksen, 1985) will encourage valuable play and development.

Perhaps the inverse of Gibson's concept of affordances is the concept of behavior settings, first described by Barker (1968). A *behavior setting* is a discrete spatial and temporal unit that affords a certain behavior or certain behaviors. Barker recognized, through direct observation and detailed recording of a child's activities, that certain activities require certain distinct environmental features (Cosco et al., 2010; Heft, 1988). On a playground, a behavior setting might be a pathway used for riding tricycles or a shaded area with a bench used for sitting and talking. The behavior setting includes both the environment and the integrated activity. Landscape architect Kevin Lynch proposed that knowledge of behavior settings could be used as a basis for designing places that would better suit people's purposes (Lynch & Hack, 1984). Following this logic, dividing a playspace into behavior settings and understanding each in terms of their affordances to children's play would help professionals design better play yards (Cosco, 2006).

The identification of behavior settings which afford specified play behaviors may enable the creation of outdoor environments that supplement or mitigate the loss of appropriate environments elsewhere. As young children's time becomes more occupied in adult-directed activities and media use there seems to be a decline in complex dramatic play and other beneficial types of play rich in creative use of the imagination and social interaction (Copple & Bredekamp, 2009). Understanding which behavior settings support dramatic play, especially complex sociodramatic, provides the opportunity to target developmental needs and create supportive environments for pre-school aged children.

CHAPTER 3

METHODS

The research questions under investigation were: "Can a natural playground provide more dramatic play affordances than a manufactured equipment-based playground?" and "Do natural behavior settings afford more dramatic play than manufactured ones?" The questions at hand were investigated using an ecological framework and the concept of affordances developed by Gibson (Cosco et al., 2010; Fjørtoft, 2004; Heft, 1988).

Figure 1. Framework model.

In this study, affordances were identified using behavior mapping to simultaneously record the location of a child on the playground with type of play.

Participants

The senior preschool at the Dolores Doré Eccles Center for Early Care & Education in Logan, Utah was selected for this study. The preschool serves the children of the students, staff, and faculty of Utah State University. The playground belonging to the preschool is a "natural playground," while directly adjacent to and available for use

by the school is an equipment-based “manufactured playground” at the Center for Persons with Disabilities.

The 24 children enrolled in the senior preschool for the entire research period participated in the study. The children ranged in age from 3.5 to 5 years old; their mean age during the study was 54.1 months. Seven were boys and 17 were girls. Four were English language learners. The same group of children was observed in both playground environments.

Setting

Built in 2010 and dramatically updated in 2012, the natural playground is characterized by a majority of natural surfaces (mulch or turf grass), open plantings, pockets of dense vegetation, a dry stream bed lined with boulders and tall grasses, curved concrete pathways, and a few log seats. In addition to the defining naturalistic features, this playground includes a sandbox under a pergola, two small garden boxes, a sensory table (sometimes filled with water and sometimes with sand), a tricycle pathway, a mat for building with large blocks, an embankment slide, two brick structures for dramatic play (one with a deck/stage on the back), several percussion instruments, and a patio that transitions out of the classroom.

The manufactured playground, also built in 2010, is principally equipment oriented with hard surfacing. Considered naturalized for its inclusion of vegetation, the main features of the manufactured playground are a xylophone, a slide, a large sand pit, a ball pit (with tubes for rolling balls), talk tubes, a water play area, concrete ramps leading

to a plastic play castle, and a spin chair. The playground also features a set of toddler swings, which were not made available to the participants because it was rated for a younger age than most of them. Surprisingly, while not sitting in the swings themselves, children still pushed around the empty seats or swung on the supporting post.

Figure 2. Natural playground.

A 10’ x 10’ pop-up tent was added to the west edge of the manufactured playground over an existing bench along with a water cooler. Since the manufactured playground was away from the children’s own classroom, the tent served the same purpose as the building transitions on the natural playground—a place for children to rest and get a drink and a place for preschool staff to attend to them.

Figure 3. Manufactured playground.

Measures and Instruments

Natural and manufactured behavior settings. Within each playground, behavior settings were defined by dividing the playgrounds into distinct spatial units based on intended behavior affordances. For example: paths for traveling, sand pits for constructive play, or spin chair for functional play. These behavior settings were then categorized as natural or manufactured. Natural behavior settings are defined here as composed mainly of organic materials in their original form (shrubs, trees, grass, logs, boulders, water, loose gravel, mulch, or sand), stand-ins for naturally occurring landscape elements (naturalistic man-made topography or built stream beds), and settings whose main function is interaction with natural elements (sand and water play areas, even if not naturalistic in style). Conversely, manufactured behavior settings are decidedly

fabricated, often mass-produced elements (spin chair, concrete paving, molded-plastic structures, brick structures).

Natural and manufactured play props. Like the behavior settings, loose parts were also categorized as natural or manufactured. Natural play props referred to naturally occurring objects (leaves, stones, wood chips). Manufactured play props were anything man-made (sand shovel, rubber ball, milk crate).

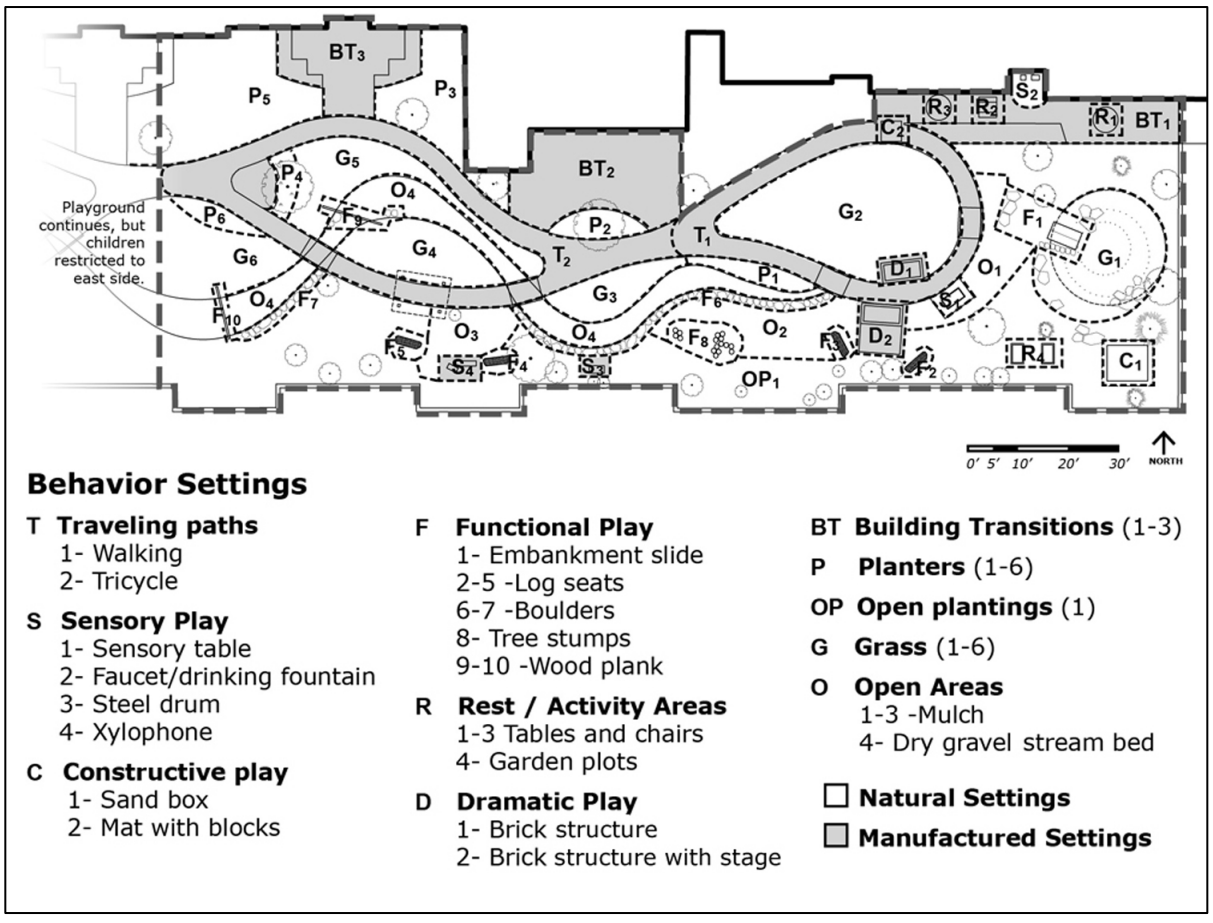

Figure 4. Plan of natural playground indicating behavior settings.

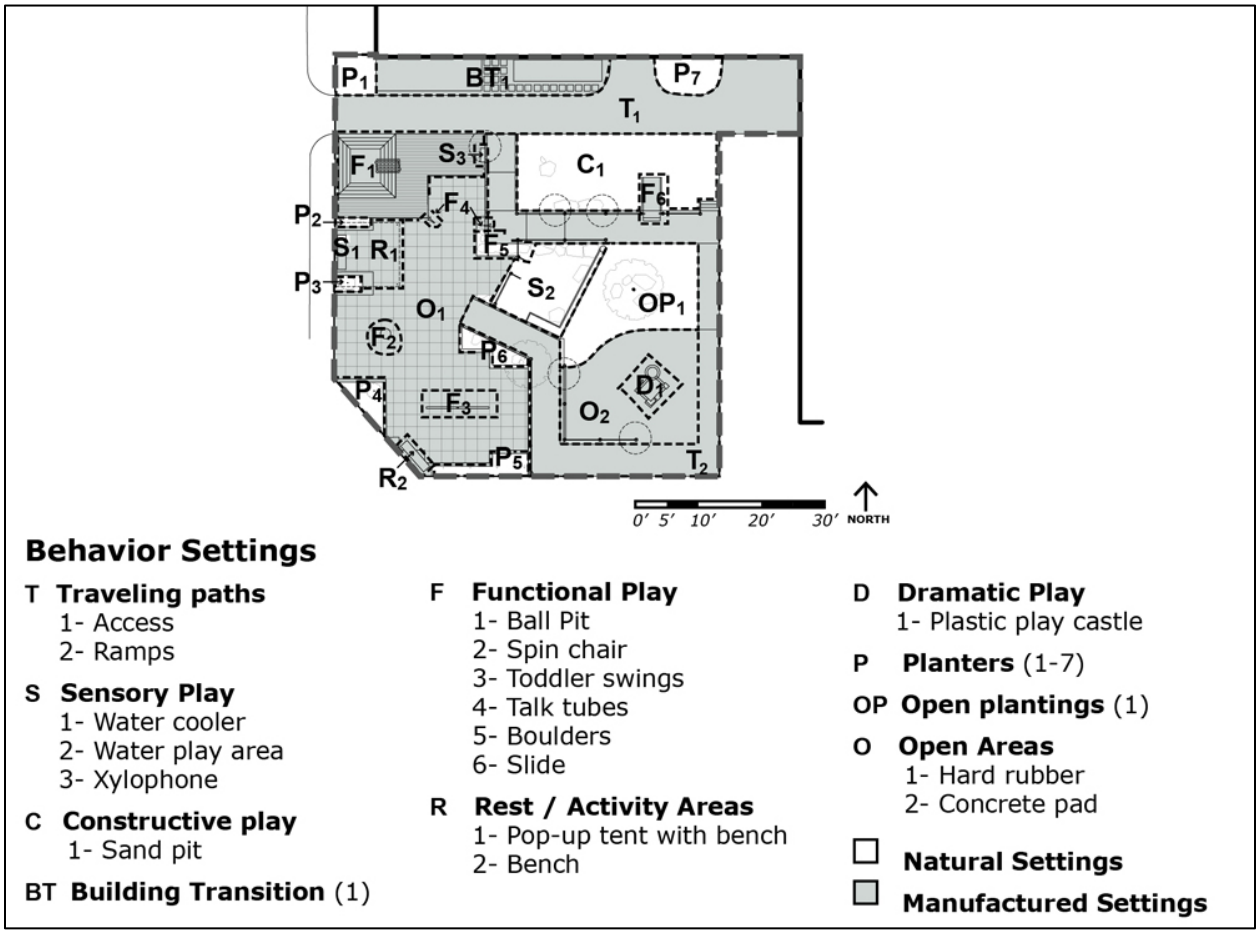

Figure 5. Plan of manufactured playground indicating behavior settings.

Smilansky Scale for evaluation of dramatic and sociodramatic play. We used a modification of the Smilansky Scale similar to that used by Elias and Berk (2002) to code children's play behaviors for solitary dramatic play, sociodramatic play and complex sociodramatic play. The scale uses five behaviors and persistence of a play episode to indicate the presence and maturity of dramatic play (Smilansky & Shefatya, 1990):

1. Imitative role-play. A child engages in self-referenced role-play using imitative vocalizations or actions; she becomes a character other than herself in another context.

2. Make-believe with objects. A child uses verbal declaration, movements, and/or a substitute object (which is not a replica of the actual object) to represent a real object in a play episode.

3. Make-believe with actions and situations. A child uses verbal declarations to substitute for action or to describe a situation to further the play episode.

4. Interaction. There are at least two (2) children collaborating to develop or maintain a play scene. This is other-referenced role-play, in which a child commands, explains, offers play props, or gestures to peer(s) with the intent that the peer(s) will listen and use their suggestions to build the play episode.

5. ***Verbal communication.*** Verbal dialogue between play partners within a play scene, either a child speaks as a role-played character or for an auxiliary character represented by an object.

6. Persistence of play episode. Child remains in an imaginary framework to support continuance of a play episode. Child may undertake multiple roles, but follows a definite theme. There is some elaboration or repetition. Interruption may take place as long as the child returns to the original theme.

Based on these behaviors, solitary dramatic play occurs when a child pretends independently; it contains at least one of the first three dramatic play behaviors (1, 2, or 3). Sociodramatic play, which is organized, group play, exhibits interaction (4) plus one

of the other four dramatic play behaviors (1, 2, 3, or 5). Complex sociodramatic play, a truly cooperative endeavor that requires higher cognitive and social skills, displays interaction (4), at least three of the five dramatic play behaviors (1, 2, 3, or 5) and persistence (6). In this study all other types of play were categorized as "other." Routine tasks, such as sunscreen application, bathroom breaks, or intervention by preschool staff (such as reprimanding), were coded as non-play behaviors and excluded from analysis.

Mode of Play. Mildred Parten's (1932) stages of play were used to further describe social interaction and maturity of play. There are six stages:

Unoccupied Play: A child is observing, not playing. This category refers mostly to infants engaged in seemingly random movements.

Solitary Play: Child plays alone and is uninterested or unaware of others.

Onlooker Play: Child observes other children playing, but doesn't take part.

Parallel Play: Child plays next to another child. Though side-by-side, they seem in their own world and are more interested in the activity than the play partner.

Associative Play: Child interacts with other children, but in an unorganized and uncoordinated manner. The child is more interested in the other children than the activity at hand.

Cooperative Play: Child engaged with other children in an organized activity, each child may have a distinct role.

Procedures

Children were observed from 11am – noon, the earlier of two daily scheduled outdoor play times. We chose morning because the late afternoon is often used for special activities and is more directed.

Each study participant was identified numerically for observation. Two researchers simultaneously observed the same children who were selected in random order. In a time-sampling procedure similar to that used by Elias and Berk (2002), each child's play was observed in 30-second intervals for an uninterrupted 10-minute period. Observers recorded a child's location at the start of each 30-second interval. For the remainder of 30-second interval any of the five specified dramatic play behaviors observed *(role play, make-believe with objects, make-believe with actions/situations, interaction, verbal communication)* were coded along with, persistence, mode of play *(unoccupied, solitary, onlooker, parallel, associative, cooperative)* and play prop type *(manufactured, natural, none)*. Notes were also taken to record play themes, vocalizations, uses of the built environment, identification of play props, and interactions with specific adults and children. For each day of data collection, observers noted weather, preschool staff members present and number of children on the playground. Forms used to collect data can be found in Appendix A. Maps used for data collection can be found in Appendix B and Appendix C.

Observation occurred daily for a total of seven weeks from the end of June to the beginning of August. Researchers observed children on the natural playground for the

first five weeks and on the manufactured playground for the remaining two weeks. The first two weeks of data collection was discarded to reduce observer effects.

Because the manufactured playground is smaller, preschool staff preferred only 10 children play there at a time. Children chose which playtimes to go to the manufactured playground or remain on the natural playground. During data collection, the mean number of children on the natural playground was 16 and the mean number of children on the manufactured playground was 11.

Inter-rater Reliability

Both kappa and percentage of agreement determined the consistency between observers for each variable; they were k = .78 or 77% for behavior setting; k = .66 or 80% for play props, k = .68 or 80% for mode, and k = .74 or 93% for dramatic play. Kappa values indicated substantial agreement (Landis & Koch, 1977). For the individual component behaviors of dramatic play kappa ranged from almost perfect (k > .81) to moderate agreement (.41< k < .61); they were k = .78 or 96% for role play, k = .81 or 98% for make-believe with objects, k = .55 or 96% for make-believe with actions and situations, k =.85 or 97% for interaction, k = .62 or 95% for verbal communication and k = .82 or 97% for persistence (Landis & Koch, 1977). Analysis used only matched data between the two observers and where dramatic play was observed by both observers, but at different levels, the lower level was used in analysis.

CHAPTER 4

RESULTS

Non-parametric tests were used to analyze categorical data yielded through observation. Each observation interval was used as a unit of analysis. Dramatic play was not observed frequently, accounting for only 13% of overall play. Of that 13%, only 1% was complex sociodramatic, 9% was sociodramatic and 3% was solitary dramatic play. A review of field notes indicated that solitary dramatic play, as defined in this study, often led into or was a disintegration of sociodramatic play.

Dramatic Play and Playground Type

A chi-square was performed to determine whether playground type had an effect on the frequency of dramatic play. The two variables were playground type (natural and manufactured/equipment-based) and type of play (solitary dramatic, sociodramatic, complex sociodramatic, and other). Playground type and type of play were found to be significantly related, Pearson $\chi^2 = (3, 1006) = 12.19$, $p = .007$. The natural playground afforded more dramatic play than the manufactured playground. Specifically 75% of the observed solitary dramatic play, 51% of the observed sociodramatic play, and 91% of the observed complex sociodramatic play occurred on the natural playground.

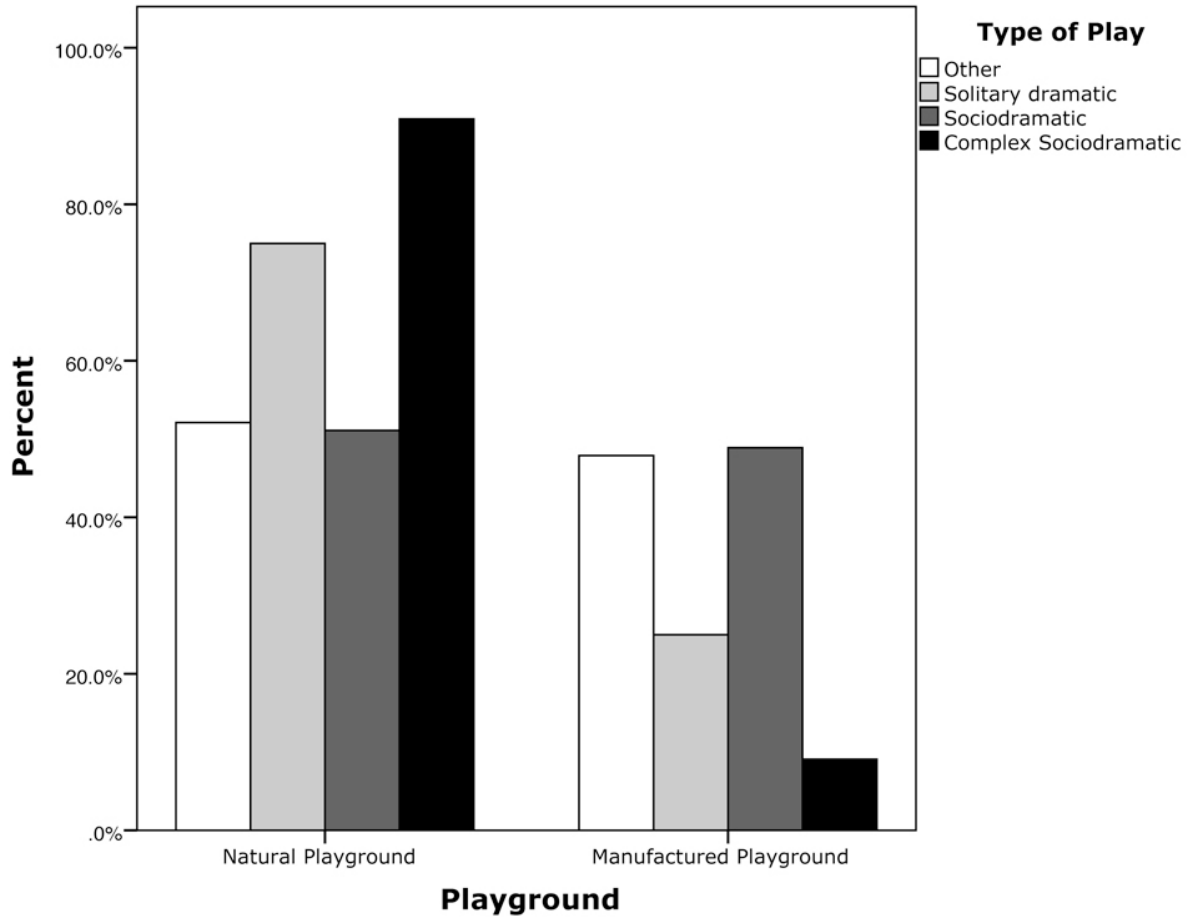

Figure 6. Frequency of types of play on the natural versus manufactured playground.

Use of Play Props for Dramatic Play

To test the assumption that the availability of natural play props on the natural playground is what primarily affords greater dramatic play, another chi-square was conducted. The two variables were play props (none, manufactured, natural) and type of play (complex socio, sociodramatic, solitary dramatic, and other). A significant relationship was found between play prop use and dramatic play, Pearson $\chi^2 = (6, 802) =$

23.09, $p = .001$. However, natural play props were not used frequently or highly associated with dramatic play.

Follow-up pairwise comparisons were conducted to evaluate the differences among the frequencies. The Holm's sequential Bonferroni method was used to control for Type 1 error at the .05 level across all three comparisons. Only the comparison of manufactured play props and no play prop was significant. Manufactured play props are more likely than no play prop to lead to dramatic play. Lack of significance for other pairwise comparisons may be due to the low frequency of natural play prop use. Natural play props were used for less than 8% of overall play. A review of field notes showed one particular play prop used with considerable frequency; the plastic milk crates on the natural playground were associated with 45% of observed dramatic play and 70% of observed complex sociodramatic play. Other props used in dramatic play (small sand tools, watering cans, water cups, a leaf, balls, sticks, shovels, and foam blocks) were not noted as repeatedly.

Social Play and Playground Type

A chi-square test was also employed to test the relationship between natural environments and social play. The variables were the types of playground (natural and manufactured) and social modes of play observed (solitary, onlooker, parallel, associative, and cooperative play). The results were not significant, Pearson $\chi^2 = (3, 751) = 5.07$, $p = .167$, indicating that both types of playgrounds provided similar affordances for social play.

Frequency of Change in Behavior Settings

During data collection on the equipment-based manufactured playground, children were observed to frequently change behavior settings; perhaps detracting from the focus needed for complex sociodramatic play. In order to test the hypothesis that children changed locations more frequently in the manufactured environment, the number of behavior settings/30 seconds was calculated by counting the number of times a child changed behavior settings within each 10-minute observation period. A one-way analysis of variance was conducted to evaluate the relationship between playground type (nominal data) and the frequency of location change (ratio data). The ANOVA was significant, F (1,102) = 5.21, p = .025, indicating that children changed behavior settings with greater frequency on the manufactured playground than the natural playground. However assessment by η^2 showed a weak association with the playground factor accounting for only 5% of the variance in the frequency of location change.

Dramatic Play and Behavior Setting Type

Finally, a chi-square test was performed to determine whether behavior-setting type had an effect on the frequency of dramatic play. The two variables in this case were behavior setting type (natural and manufactured) and type of play observed (complex sociodramatic, sociodramatic, solitary dramatic, and other). Results indicated a marginal significance, Pearson χ^2 = (3, 902) = 6.34, p = .096. Manufactured behavior settings are marginally related to dramatic play. A closer look at the specific locations showed three manufactured settings, which afforded a great majority of the high-level dramatic play:

on the natural playground, the brick structure (a rectangular structure with one open side and three closed sides with window-holes) and the brick structure with stage (a similar structure with a deck connected to the backside) and, on the manufactured playground, the plastic play castle.

Figure 7. Brick structures on the natural playground.

Figure 8. Play castle on the manufactured playground.

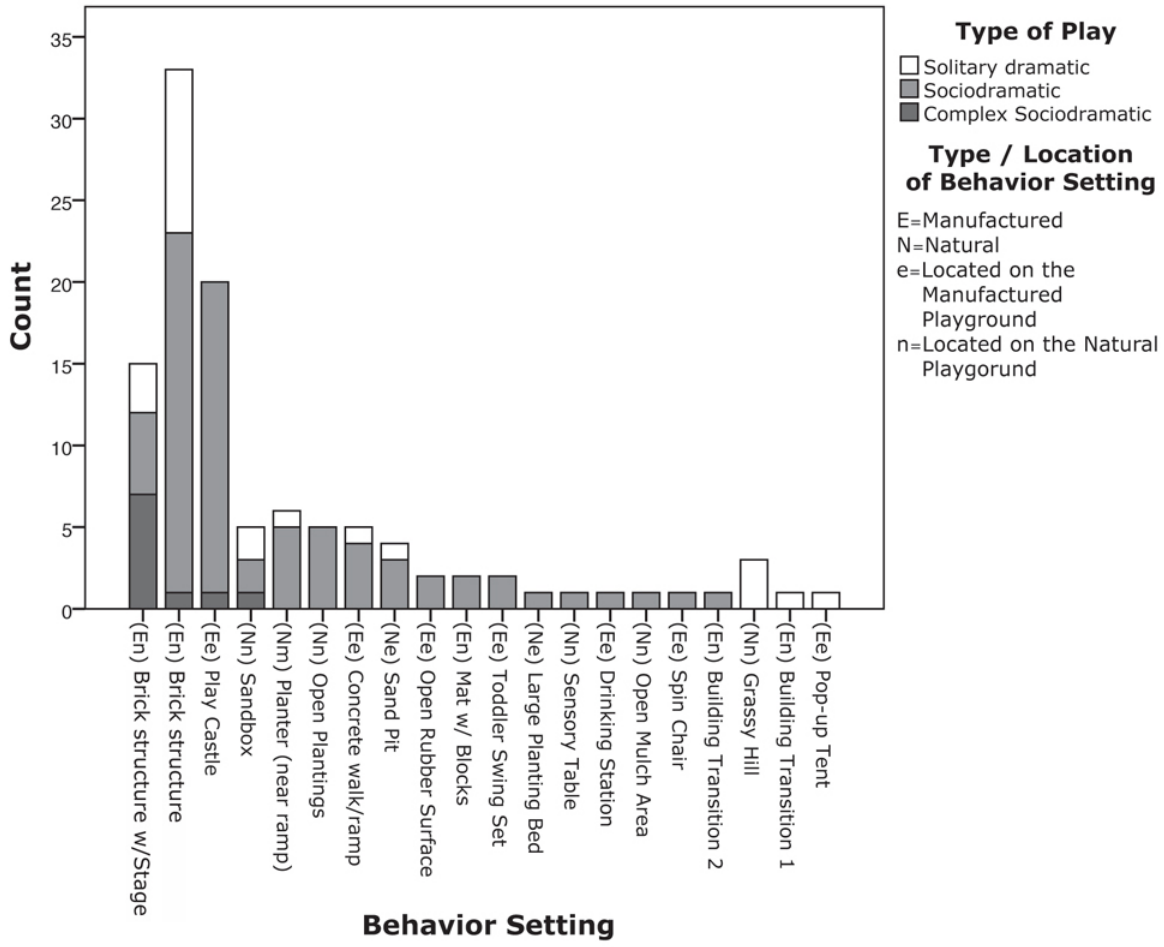

Figure 9. Behavior settings that afforded dramatic play.

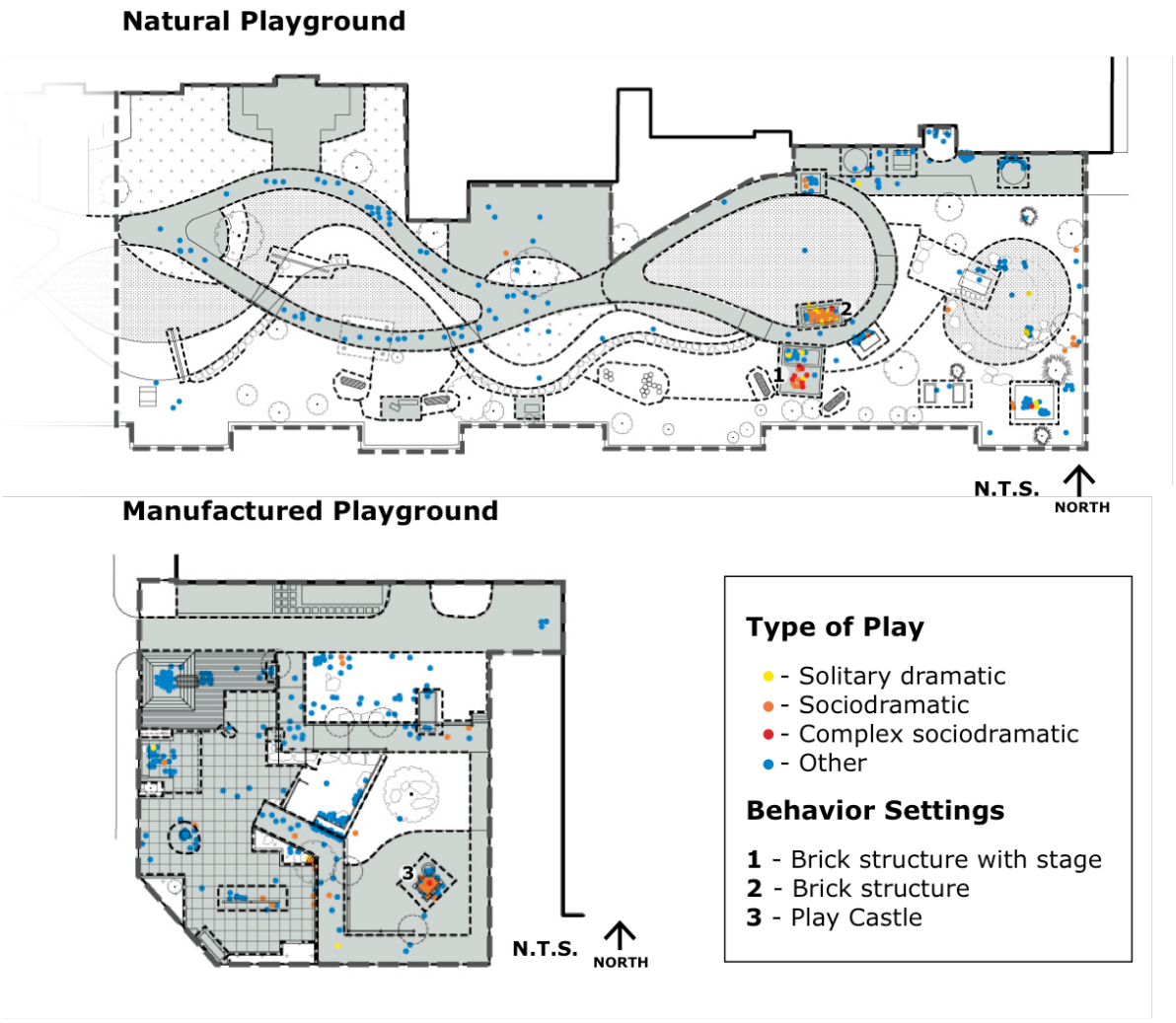

Figure 10. Dramatic play behavior maps.
(Refer to *fig. 4 and fig. 5* for identification of all behavior settings)

CHAPTER 5

DISCUSSION

This study compared the dramatic play affordances of natural versus manufactured playgrounds and natural versus manufactured behavior settings. Direct observation indicated that the natural playground afforded more dramatic play, however natural behavior settings and natural play props did not factor prominently in the dramatic play observed. Instead, children's dramatic play developed more frequently in conjunction with manufactured settings and manufactured play props. Specifically, the coupling of the brick structures and plastic milk crates seemed to afford the most dramatic play.

Figure 11. Rendering of brick structure and plastic milk crates on the natural playground.

Man-made Enclosure and Child-scale Constructive Play Props

Functional play-oriented equipment did not generally afford the elaboration of complex dramatic play. The increased frequency with which children changed behavior settings on the manufactured playground suggests the boredom or distraction that may come from a predominantly equipment-based setting with well-defined uses. The flexible nature of the natural playground may have been part of the reason for the greater affordance of dramatic play. More prominent, however, was the availability of child-scale constructive play props, which added to the play possibilities. In particular, the milk crates, which became bunk beds, chairs, tables, and "kitty cages," as children set the stage for dramatic play episodes:

Three girls are on the stage behind the brick structure each in a milk crate with another milk crate over their heads encasing themselves. They get in and out of the crates…

Jenny[1] *meows, "We didn't get buyed yet. Meow. Meow."*

Rita in the "cage" next to her, tells the recently arrived Zoe she can be a dog, "We're at a pet store."

This supports recent research that "loose parts" that allow for child-scale constructive play lead to increased dramatic play (Maxwell, Mitchell, & Evans, 2008). The malleability of one's environment more than just availability of play accessories seemed to be an important affordance on the natural playground. The manufactured playground, without defined space or play props for larger scale constructive play, did

[1] Children's names have been changed.

not have the affordances to engage in dramatic play place making.

Use of the brick structures and other spatially delineated settings, like the play castle and sandbox, allowed cooperative interaction among small groups of around two to four children by providing them with easily defined bounds for their make-believe play scene.

The frequency of dramatic play concentrated in these areas corresponds with previous research that enclosure or encapsulation provides the necessary affordances for dramatic play (Brown & Burger, 1984; Kirkby, 1989; Maxwell et al., 2008). High use of these structures may more specifically indicate a preference for overhead low "ceiling" and "wall" enclosure. Although the play castle lacked a roof, children hide under the slide, which effectively created a "ceiling." Vegetation and other features on the playgrounds, which created loose "walls," lacked "ceiling" form. The design of these spatially distinct behavior settings and their placement within the playground may make a bigger impact on sociodramatic play than type of playground. Similar frequencies of social play on both playgrounds might be attributed to like affordances for large motor activities that support social play (Vandenberg, 1981), while differences in dramatic play affordances might be correlated to the presence of quiet spaces away from these large motor activities (Groves & McNish, 2011). On the natural playground the major motor activity, tricycle riding, is allowed only on a separate circulation path. There is no clear separation on the manufactured playground. An advantage in the design of the brick structures (and the stage behind one) is the open flat floor, which afforded a platform for children to further shape the play scene via constructive play. Their built assemblages in

turn, may have attracted other participants to the play scene.

The greater affordance of the brick structures and plastic play castle may also be a matter of young children's ability to recognize the affordance. The children may not have seen the affordances in the natural environment. Either natural behavior settings were incompatible with their imaginative play schemas or the natural settings were incongruent with their chosen play themes. The manufactured playground was identified by the play castle. Initiated by their teacher, the children referred to the playground as "Castle Park" or "Castle Playground." This naming may be evidence of the perceived significance of the castle for play. Common play themes were place-based and related to built structures common in a child's daily experience either directly or through the media: Baby/Mama/Dad (home), kitties or puppies (pet store or home), princesses (castle-home), doctor (doctor's office). Manufactured play props may have afforded more dramatic play than natural play props for this same reason; young children can relate the manufactured to their daily experience, which is a prompt with which to scaffold their play. The small paper cups available on the manufactured playground, intended solely for drinking, were a play attraction for children. On the natural playground two girls playing "kitty" were observed sipping out of the top of watering cans meant for care of the garden plot (before being told not to by preschool staff). The possible uses of these objects were part of the daily experience of the children. Affordance for dramatic play was therefore quickly perceived.

Interactions with Nature

Natural play props did not play a large role in the children's dramatic play or play in general. Sometimes children incorporated wood chips, gravel and sand into their play, but plant material was rarely used. This may indicate a lack of appropriate natural play props on the natural playground or the greater attractiveness of the many manufactured play props made available to the children. Whereas the milk crates were modular, stackable, and strong enough for the children to sit or stand on, nature may not easily allow human-scale building for preschool-aged children. Natural play props were used for small accessory object substitution, such as a stick as a hairbrush or a leaf as a Band-Aid.

During the study period a hunt for ripe strawberries highlighted a dilemma in natural playground design:

"If they're red, we can eat them," Alex tells an aide. He finds a strawberry and instructs a couple classmates, "Let's find more red ones. We have to find more strawberries!" But he does not find anymore. He begins to pout, "I won't be your guys friends! It's not fair you guys have more." He is visibly agitated. He gets aggressive and attempts to steal one of his friend's strawberries.

When children were next observed hunting for strawberries preschool staff reminded them that they couldn't pick the strawberries because there were not enough for everyone to eat. To prevent the negative social interaction that results from excludable natural resources, preschool staff may institute a taboo against using natural resources in play. This defeats the original design intent of a natural playground and obscures the play

affordances of natural behavior settings. Play value on a natural playground is thus dependent on both physical design and implementation of creative policies for its use. If an excludable natural resource is included in the design, there must be enough of it to encourage play and it must be managed so that the play affordance is not obscured or lost during conservation.

Likewise balance must be found between improper and proper use of play props. In a comparative study of twelve playgrounds, Herrington and Lesmeister (2006) observed that the duration of play in sand and water areas was shorter and less involved at childcare centers where use was tightly controlled as opposed to centers that encouraged mixing and transportation of the materials. Yet play value may be put at odds with children's safety, playground maintenance, and adult aesthetics. This conflict seems especially prevalent at the convergence of manufactured and natural behavior settings, as natural play props are often considered waste and swept or raked up outside the play realm. For example: taking sand from the sensory table to the brick structure, *"Let's get it sandy and wet… make kitty food* or gravel from the dry stream bed thrown mischievously over the tricycle path: *"If someone goes right there, than, ahhh!*" The establishment of play policies consistent with the philosophies of the preschool community along with staff and parent education might best resolve this conflict and allow for the highest quality play. Astute playground design can also provide provision for the spilling over of loose materials into other behavior settings, such as textured concrete paths (rather than smooth ones, which can become slippery) next to sand play areas. Behavior settings with vegetation less able to handle wear might also limit free

play. In this case, playground designers might also, where appropriate, install more mature vegetation and give it sufficient time to establish by putting temporary protection in place for the first two or three years after its installation (Moore et al., 2009).

The natural playground did encourage exploratory interaction with the natural world. On the natural playground children waded through the willow shrubs to find ladybugs, poked between flagstone pavers to find rolly polies (pill bugs) that would become their "pets," hunted for strawberries, and showed each other grasshoppers and spiders they found in the grass.

"Look how much it bleeded on me!" Sarah squeals.

"It's poop." Emily responds matter-of-factly.

Extended developed exploratory nature play was rare on the manufactured playground. Interactions with nature for the most part seemed incidental and out of place—a grasshopper landing in front of a group of girls or a dead bee floating in the water trough. Thus a natural playground likely leads to more meaningful exposure to nature than a naturalized playground where the living landscape is confined to the margins. The natural playground, in addition to affording more dramatic play and thus perhaps encouraging more cognitive and social learning, also fulfills the intent of providing children with self-initiated nature learning and peer teaching, which is limited in a modern urban setting.

Scaffolding for Increased Complex Sociodramatic Play

Complex sociodramatic play did not occur frequently. This was expected.

Previous studies of preschoolers outdoor dramatic play indicate that self-initiated dramatic play may only account for .2 – 6.0% (Sanders & Harper, 1976) to 25% (Maxwell et al., 2008) of overall play. Scaffolding was observed on the playground as a means to increase dramatic play. During the study period there was an incident (excluded from analysis because it was atypical) where the teacher initiated and guided dramatic play.

Miss Amelia set the scene by asking, "Who wants to be the pilot?" then asking the "pilot," "Pilot, where are we flying?" She then guided the play and involved other children by using questions like, "Who wants to go down the aisle and pass out drinks?" and then to that child, "What kind of drinks do you have? "

This play episode attracted and involved about ten children. Interestingly, like the complex play initiated by the children themselves, this adult-initiated dramatic play also used child-scale constructive play. The teacher collected and lined up all the chairs on the playground to create "airplane seating" for the impromptu dramatic play. Thus, valuable adult-supported dramatic play, which may lead to more complex children's play, may have similar requirements to child-independent dramatic play.

Facilitating Complex Nature Interactions

In Moore's study of the Environmental Yard part of the success of plants as play props seem to come from conscious effort by staff and teachers to include existing playground plants and ecosystems into the curriculum. In his observations the children's familiarity with plants is clear, such as a girl exclaiming "I made a bay leaf mustache to

smell" (Moore, 1989b). Not only did the girl know the name of the plant, she knew it was pungent. Play themes stem from topics of relevance to a child. Adult introduction to a new theme or object may be explored and understood more thoroughly through play. This study did not include research observations beyond outdoor free play, so children's formal exposure to plants and environments on the playground are unknown. However teacher and staff involvement are likely important to reach the full learning potential of a natural playground.

Anecdotal Observations

Children's characteristics and dramatic play. Within the first couple weeks of observation it was clear that the preschool class had a playground pecking order. Dominant children seemed more vocal, were sought after playmates by other children, often directed play, and engaged in more social interaction (both positive and negative/aggressive). However, there seemed to be no correlation between social dominance and dramatic play. This suggests that social dominance may not be an indicator of play maturity. Additionally no correlation was found between dramatic play and age. This supports the notion that the rate of development of different domains varies from child to child. It may also indicate personal preferences for learning modalities. Interestingly, all children observed in complex sociodramatic play were native English speakers. There were four English language learners in the group of 24 children. This may indicate that various socio-cultural backgrounds affect exposure to and perception of dramatic play. Due to the small sample size of this study further research is needed to

confirm the correlation between a child's personal characteristics and inclination toward dramatic play.

Play environments and physical comfort. Although risk and the ability to experience unpleasant sensations may be part of learning, physical discomfort can have a negative effect on quality play. Research observations were conducted during summer months with temperatures ranging from around 70˚F to 85˚F. On hot days children were observed siting languidly in the shade or impatiently asking staff if it was time to go inside yet. One child spent the majority of a ten-minute observation period standing in the doorway to the air-conditioned classroom. Complex play was not observed. In cases where social play was in progress, bathroom breaks were a physical need that interfered with sustained play. A child's quick return caused little effect, whereas a longer absence left the child out of the play episode. These observations underline the need for varied microclimates, available drinking water, and restrooms located adjacent to the playground.

Preferred behavior settings. Some of the behavior settings most frequented by children during formal observation were the settings designated for dramatic play. For more than 7% of play observed on the natural playground, children were located in the brick structures. On the manufactured playground, the play castle accounted for 8% of play, the most frequented setting on that playground. This corresponds with Samborski's finding (2010) that in a playground dominated by large playfields and one multi-use manufactured structure, young children showed a disproportionate preference for a group of shrubs they utilized as a den (Samborski, 2010). It also supports Titman's (1994) data

that children view dens as a component of the ideal environment. This emphasizes the importance of encapsulation or enclosure not only for dramatic play, but also as an affordance for other play behaviors as well.

Limitations

This study identified the natural playground with play props that allow child-scale constructive play and enclosed manufactured behavior settings as those that afford the most dramatic play, however some limitations should be noted. It was not always possible, especially in solitary dramatic play, to visually determine whether dramatic play was happening. Observers sometimes had to wait for a speech declaration to be sure and sometimes these were hard to understand. As such, the observed frequency of dramatic play may have been lower than the actual occurrence of dramatic play. However, since the same observation process was used on both playgrounds, inaccuracies in the comparison between natural and manufactured playground and natural and manufactured behavior settings were most likely not due to this factor. Another limitation was the smaller overall size of the manufactured playground and thus the smaller groups of children observed. This may have negatively affected the social interaction on the manufactured playground. Lastly, the sample population, identical to the children enrolled in the senior preschool, was disproportionately female. Thus, although boys were observed to engage in dramatic play in similar settings to the girls, the results were likely in favor of female preferred affordances.

Implications

The study's findings suggest that the natural playground afforded more dramatic play than the manufactured playground and the manufactured behavior settings seemed to afford more dramatic play than the natural behavior settings. In terms of dramatic play, the benefit of natural playgrounds was most likely the emphasis on "loose parts," both natural and manufactured. To create developmentally appropriate outdoor settings for dramatic play, play professionals should provide for coupling of enclosure with play props and a platform for child-scale constructive play in non-prescriptive, perhaps natural, surroundings.

For future research. ***Improved methods.*** Initially, during trial observations, clip-on number tags were used to identify the children. This was a play distraction to the children who would fiddle with the tags, focus on who had what number or question why they were wearing numbers. The tags were difficult to read during active play and were unwieldy for the staff that took time out of designated outdoor playtime to put the assigned number on each child. For the actual observation period, children were pre-identified by staff members according to their assigned numbers. Visual identification proved easier for data collection, although it initially hindered observers' ability to identify those with whom the children under observation were interacting.

Continued study. The investigation of the affordances for dramatic play might be continued with more robust comparisons of natural and manufactured settings. For example, future studies might include natural enclosures like a willow den or a grouping of shrubs that intentionally create defined space comparable to the architectural brick

structures/play castle. Future study should investigate the provision of sufficient large-scale natural play props such as logs or reeds (and perhaps tools) that afford child-scale constructive play, similar to that supported by the milk crates. This would give greater insight into the preferences and schemas of a modern preschool child. Future studies may also include a more intense study of the background of the participants and classroom activities to consider whether the dramatic play affordances observed were related to perception or actual preference.

While this study focuses on two private preschool playgrounds, the importance of child-scale constructive materials for dramatic play also begs the question: "How can such amenities be provided in the public sector?" An exploration of existing public playgrounds, child interactions and mobility in public space, as well as the requirements for the public environment including low maintenance and vandal-resistance, may determine if nature can provide for this play need.

For Design. Loose design guidelines can be distilled from the research observation of this study corroborated with existing play literature. To support developmentally dramatic play outdoors, playground designers should consider the inclusion of enclosed spaces, perhaps with ceiling enclosure, "loose parts," and participatory design. Although the encapsulated spaces on the playgrounds observed were manufactured, Samborski (2010) suggested that the single most cost effective addition to a playground would be a vegetative den. To provide for complex play the enclosed spaces must also support connections to child-scale constructive play. Playground designers can provide for the use of "loose parts" by including open flat areas for

prolonged constructive play, specifying “loose parts” in the way movable furnishings are typically specified and building outdoor storage where parts can be stored. Storage facilities for “loose parts” are important to prevent clutter that can hinder play. Herrington and Lesmeister observed that too many “loose parts” in a sand play area prevented affordances such as digging (2006). A shed, accessible to children can also allow play to be more child-directed and open-ended (Kuh et al., 2013).

Collaboration in landscape architecture is critical for project success. Early childhood professionals are more acutely aware of children’s needs especially as they apply to the demographics and culture of their school. Since use of a play space is governed by the culture of the preschool, it is imperative that design solutions meet the social context of the place. Frustration and discouragement, rather than development and learning, can result from affordances, which cannot be actualized. Landscape architects might also benefit from viewing the landscape down at a child’s perspective. Often what might seem like a completely legible landscape to an adult can be a maze of furniture legs and support poles to a child (Herrington & Lesmeister, 2006). Moore (1989b) and Samborski (2010) also advocates for specialization in landscape knowledge and skill focused on child development as it is for wildlife habitat restoration or sports turf maintenance. A participatory process, which includes researchers, teachers, parents, and children, can ensure a developmentally appropriate playground that emphasizes desired play behaviors, such as dramatic play.

Conclusion

In summary, natural playgrounds are a promising movement toward rich malleable environments that support quality play that serve the purpose of getting children in touch with nature. However, natural playgrounds are not inherently better than traditional equipment-based or manufactured playgrounds for development in social or cognitive domains unless so designed. In terms of dramatic play, findings are consistent with previous research that settings designed with enclosure, child-scale constructive and small-scale accessory "loose parts," and non-prescriptive surroundings afford more complex dramatic play. Quality play is also reliant on teacher-support and social mores of the preschool as they relate to use of outdoor space. To this end, a clearer understanding of how to provide these social and physical settings within a natural environment will better enable play professionals to facilitate dramatic play. For young children, this may mean necessary inclusion of manufactured behavior settings and play props.

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APPENDICES

Appendix A. Data Collection Sheet

DATA - DRAMATIC PLAY AFFORDANCES IN OUTDOOR SETTINGS FOR PRESCHOOL CHILDREN

Date: _____ Observer: _____

Temperature: _____ Weather: SUNNY OVERCAST RAINY

# of children on Playground: __ __ _____ Adults Present: _____

CHILD: _____

Unoccupied
Solitary: Alone
Onlooker: Observes w/out participation
Parallel: Playing side-by-side
Associative: Unorganized activity, no coordination
Cooperative: Organized w/specific roles

Interval	Imitative role-play	MB w/objects	MB w/actions, situations	Interaction	Verbal Communication	Persistence (# intervals)	Mode: U/ S/ O/ P/ A/C	Play Props Natural	Play Props Manufactured	Notes
1										
2										
3										
4										
5										
6										
7										
8										
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10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

CHILD: _____

1										
2										
3										
4										
5										
6										

Interval	Imitative role-play	MB w/objects	MB w/actions, situations	Interaction	Verbal Communication	Persistence (# intervals)	Mode: U/ S/ O/ P/ A/C	Play Props Natural	Play Props Manufactured	Notes
7										
8										
9										
10										
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19										
20										

Unoccupied
Solitary: Alone
Onlooker: Observes w/out participation
Parallel: Playing side-by-side
Associative: Unorganized activity, no coordination
Cooperative: Organized w/specific roles

CHILD: _____

1										
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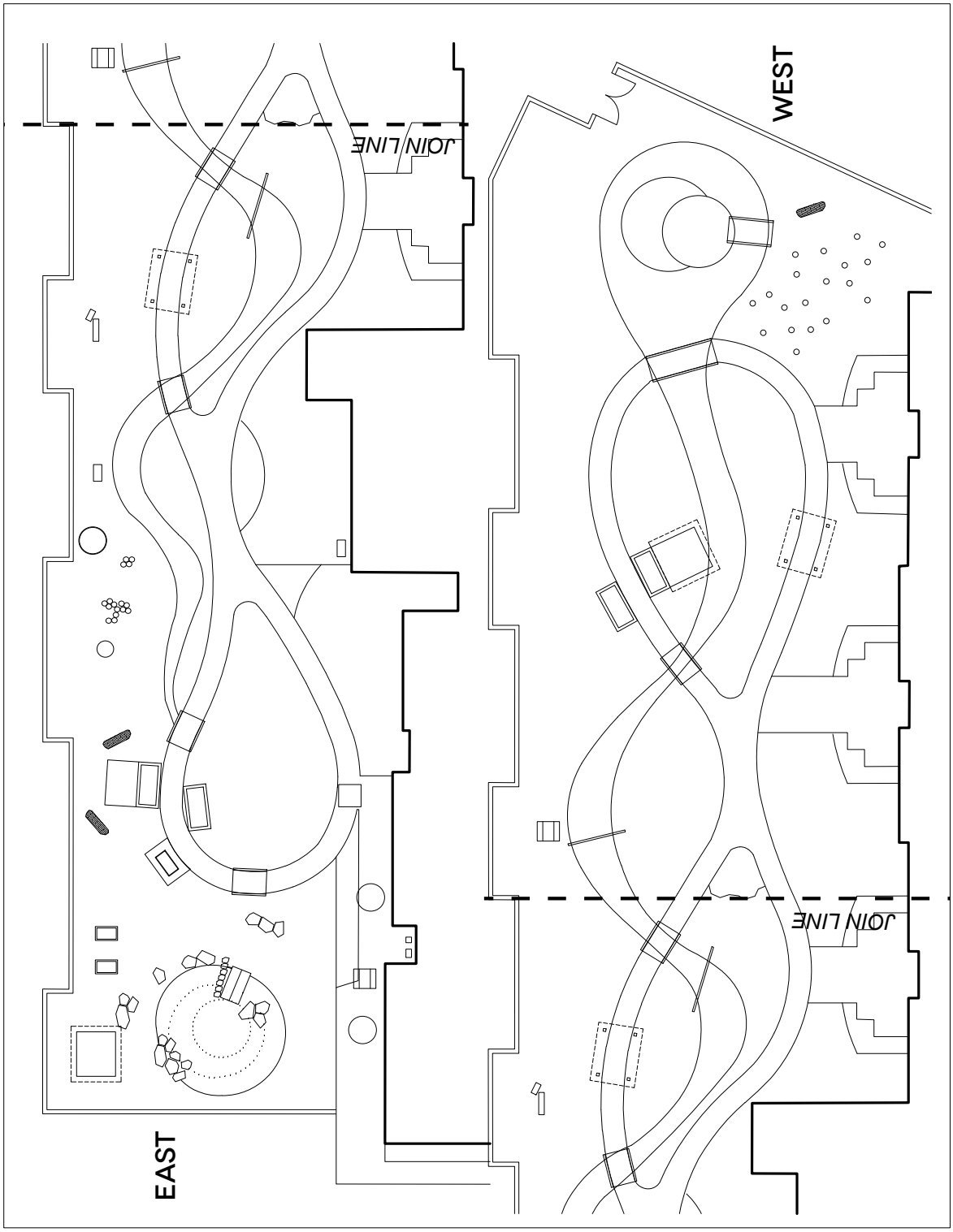
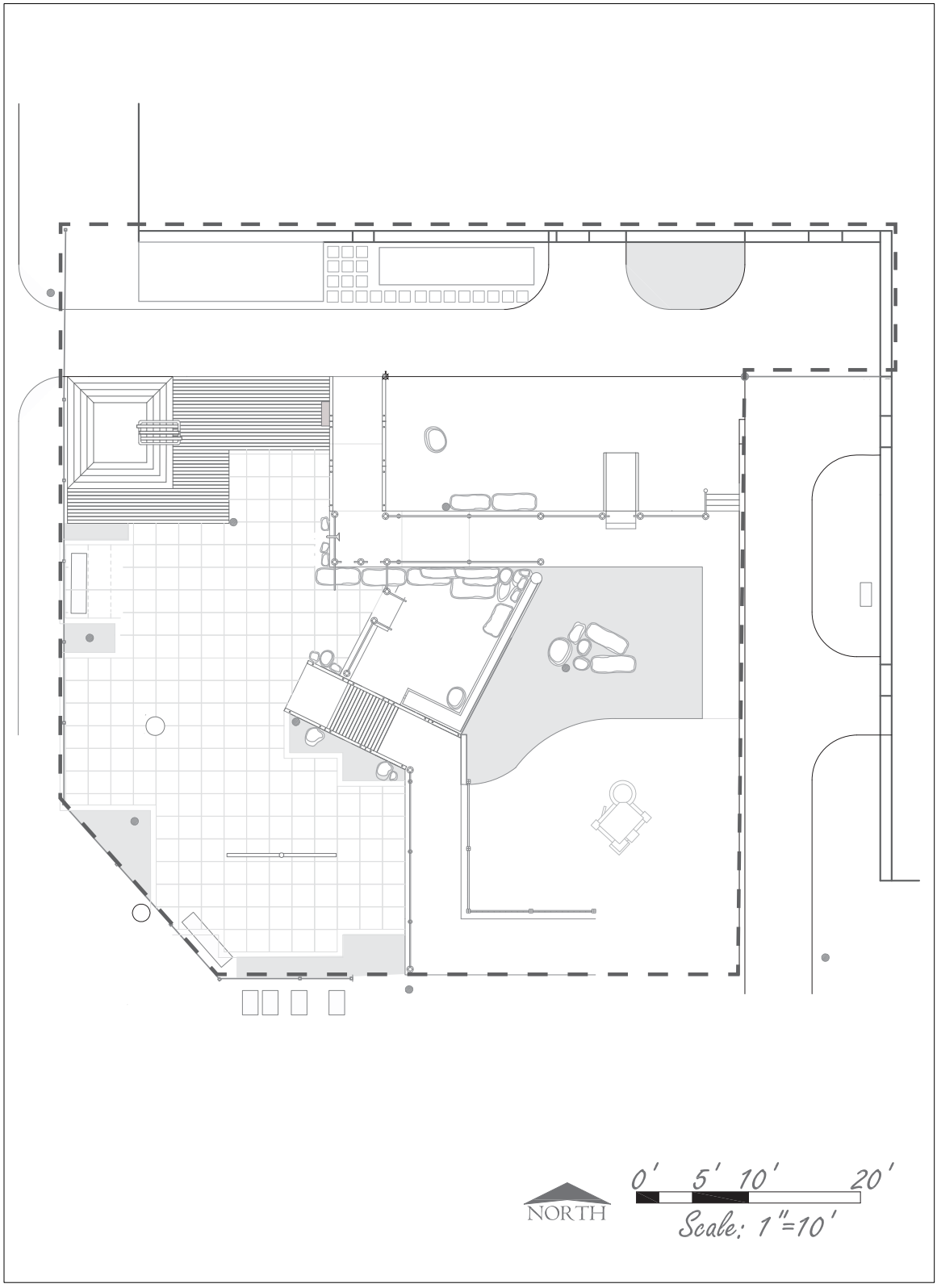
Appendix B. Data Collection Map for the Natural Playground


WEST
JOIN LINE
JOIN LINE
EAST

Appendix C. Data Collection Map for Manufactured Playground


NORTH
0'
5'
10'
20'
Scale: 1"=10'